pragma's product profiles

Issue #37 The *free* newspaper for Pick™ users. July 1987

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Two Techies Talk Tape Transfers

Claire is an experienced Pick programmer at Nosler-Bag Industries, a large paper manufacturer with about a dozen programmers on its data processing staff. Norman is a newly-hired programmer at Nosler-Bag, with only a small amount of programming experience, none of it on a Pick system.

Norman recently asked Claire for some advice about his first programming assignment at Nosler-Bag...

Norman: Claire, I was wondering if I could ask you some questions about this mag tape that just came in from the Canadian division?

Claire: Sure. What do you want to know?

Norman: As I understand it, the tape contains some inventory records from that division's IBM System/38. I'm supposed to move that data into a file on our machine so our production control manager can generate some reports. I'm also supposed to make a tape of our division's inventory records and send it back to them so their manager can do the same thing with our data. Can you give me an idea of how to do it?

Claire: Okay. First of all, do you know their tape's format? Density, layout, and so on?

Norman: This sticker on the tape says it's an unlabeled, 1600 BPI EBCDIC tape, with 80-byte logical records and a blocking factor of 100. I'm not sure what all that means.

Claire: 1600 BPI means the tape was recorded at a lengthwise density of 1,600 bits per inch. Our tape drive can read 1600, 3200, and 6250 BPI tapes. Just make sure the switch setting on the front of the drive is at 1600 when you mount this tape, and you won't have any problems reading it.

EBCDIC is the 8-bit character encoding scheme normally used by IBM systems, whereas Pick and most other systems normally use ASCII encoding. Our BASIC has an ASCII() function that will let you convert the EBCDIC characters on the tape to ASCII characters.

A labeled tape starts with a small record that identifies the tape file that follows. Since this tape is unlabeled, there's no label record, and the first record on the tape is an actual inventory data record. Did they give you a description of the record layout?

Norman: Yup. The first 10 characters are a part number, then a 30-character description, 5 bytes for the quantity, some other stuff...

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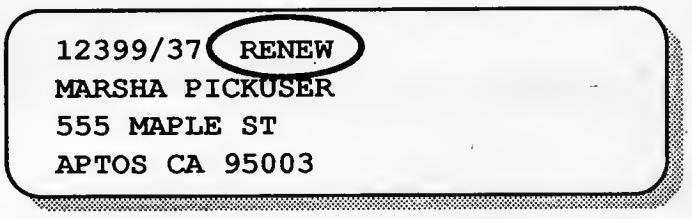

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Hmmm, it adds up to 80 bytes of data, so I guess that's what they mean by a logical record.

Claire: Right. But while we prefer to think of the data as 80-byte records, whoever made the tape used a blocking factor of 100. That means every 100 inventory records have been "blocked", or concatenated together, into an 8,000-byte bunch, then written to tape in those large chunks. You'll have to read the tape as a series of 8,000-byte "physical" records and then break each of those chunks into a hundred 80-byte "logical" records.

Norman: Why did they create the tape that way? Why not just let one logical record be written as one physical record on the tape?

Claire: Because of the design of some tape drives, reading all physical records takes about as much time as reading large physical records, so packing data into large records means fewer records have to be read, and more time is saved. There's also a considerable gap on the tape between physical records, so blocking saves tape space and tape travel time.

Norman: I found out about the READT statement in the BASIC manual, so now I think I know how to proceed. I need a loop to read the physical records, then a nested loop inside that to break out the logical records. Something like:

```
OPEN "TEMP" ELSE STOP
get: READT BLOCK ELSE STOP
FOR L = 0 TO 99
 LOGICAL = BLOCK[(L*80)+1,80]
 ID = LOGICAL[1,10]
 ITEM = ""
 ITEM<1> = LOGICAL[11,30]
 ITEM<2> = LOGICAL[41,5]
 *make more attributes here*
 WRITE ITEM ON ID
NEXT L
GOTO get
END
```

That fills a file named TEMP with items having the description in attribute one, quantity in attribute two, and so on, right?

Claire: Right. You'll have to use the CREATE-FILE command to create the TEMP file before you run your program, along with a T-ATT 8000 and a T-REW to attach the tape drive at the right block size and rewind it to the load point. Also, you should put a TRIM() around LOGICAL[41,5] to make sure only digits and no blanks end up in the quantity, and around LOGICAL[11,30] to chop trailing blanks off the description. And you need BLOCK = ASCII(BLOCK) right after doing the READT, to convert BLOCK from EBCDIC to ASCII.

Also, notice that you're assuming every tape record has a full 100 items. The last record on the tape probably doesn't have exactly 100 logical records, and is probably padded with blanks or zeroes to make it 8,000

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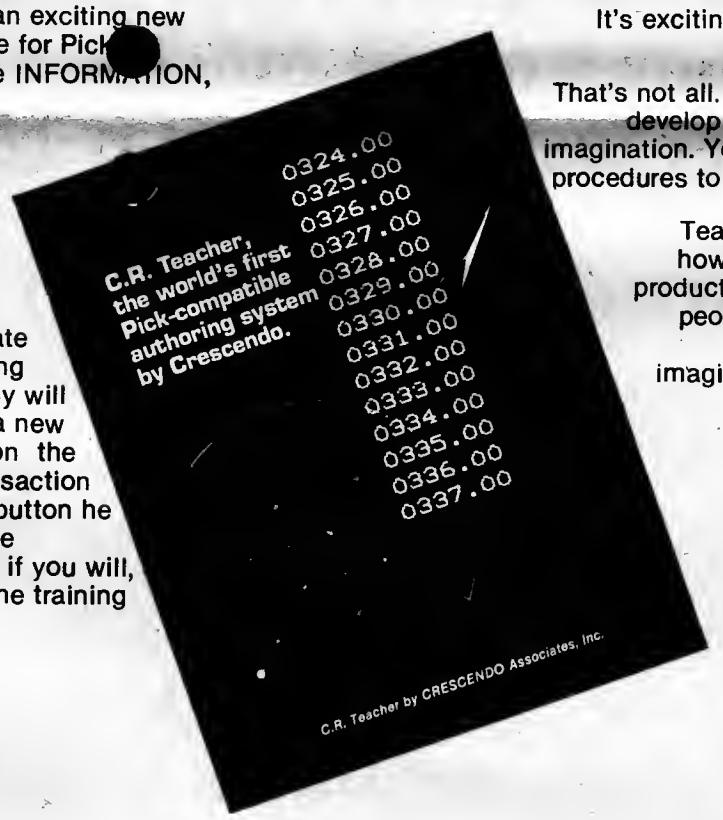

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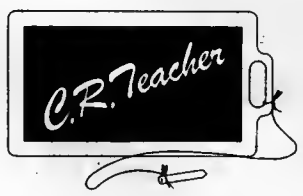

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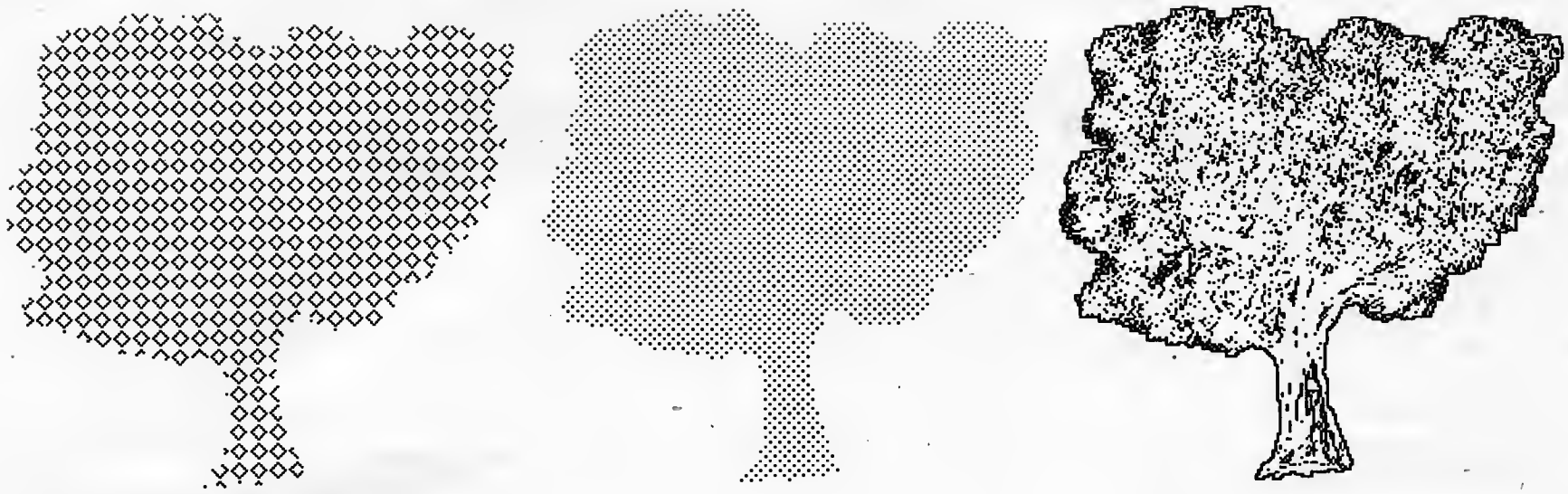
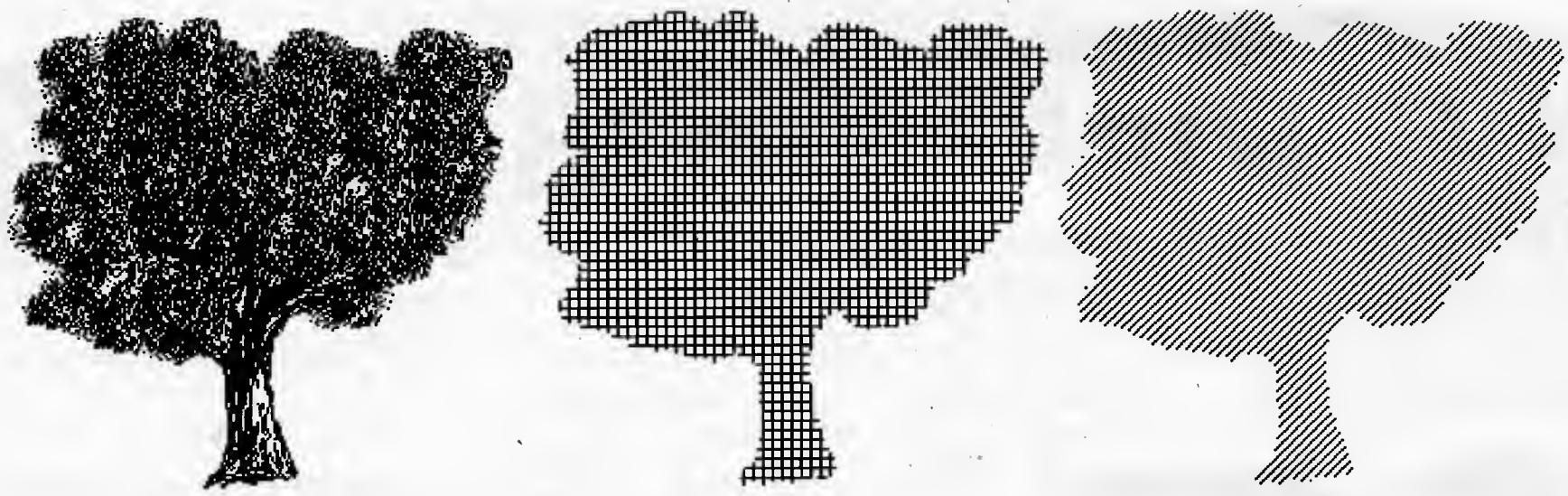


ONCE UPON A TIME, there lived a Pick™ computer user named Mike.

Every workday, from eight to five, Mike would sit in front of a terminal and type commands to make his computer produce reports. Sometimes the commands worked quickly and would make Mike's computer instantly display results. But usually Mike had to type a command that began with the dreaded words SORT or SELECT. Then the computer would take forever to process the command, and Mike would have to wait a long time before the computer could display the report.

Fortunately, Mike could stay busy while waiting for a SORT, because that's when he would always get lots of phone calls from his coworkers, who wanted to know why the displays on their terminals were suddenly slowing down to a crawl.

As each day passed, Mike got more and more bored with his slow computer.



One day, something terrible happened. Mike had just finished waiting ninety minutes for a complicated SORT, and was paging through the report on his terminal. Suddenly, Mike accidentally hit the Return key, and page four of the report flashed by before he could read it. Mike would have to do the whole SORT over again just to see page four. Mike almost had a nervous breakdown.

Fortunately, Mike pulled himself together. But Mike was mad. He just wasn't going to put up with those slow SORTs and SELECTs anymore. So Mike bought B-TREE-P.

Now Mike is very happy. He doesn't have to wait for his computer to SORT anymore. Mike can instantly find and display any data he's looking for. Even scroll forward and backward through his files. And his coworkers no longer call him, because the computer isn't sluggish anymore.

The moral of this story? Buy B-TREE-P. You'll be as happy as Mike.

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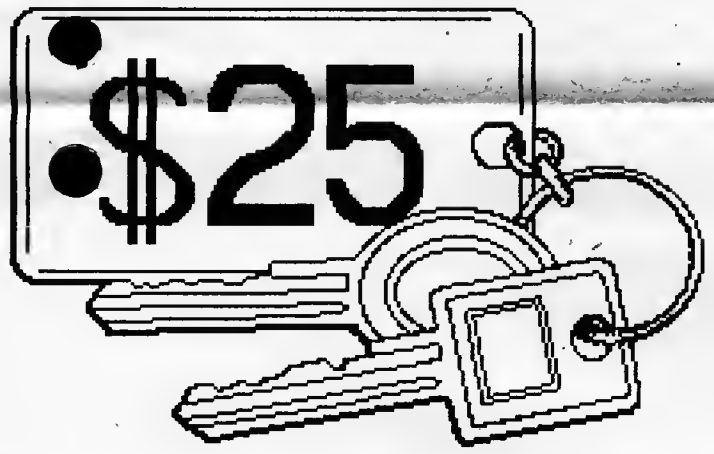

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bytes long. You can either code in a test to WRITE ITEM only if ID is valid, or just manually search the file for garbage items after processing the tape.

Norman: The parts file I'm supposed to dump to tape has the description in attribute 5 and the quantity in attribute 6, so I figure my tape-making program should be something like:

```
OPEN "PARTS" ELSE STOP
SELECT
LOOP
 BLOCK = ""
 FOR L = 1 TO 100
  READNEXT ID ELSE ID = ""
  READ ITEM FROM ID ELSE ITEM=""
  DESC = ITEM<5> ; QTY = ITEM<6>
  etc = "other data"
  BLOCK = BLOCK : (ID "L#10") :
   (DESC "L#30") : (QTY "R#5") :
   (etc "L#35")
 NEXT L
 WRITET EBCDIC(BLOCK) ELSE
  STOP "WRITET FAILED"
UNTIL ID = "" DO REPEAT
STOP
END
```

Since I know there are no null item identifiers in the PARTS file, I use that as my end-of-file test.

Claire: I see that the inner loop correctly pads out every block, even if the end of the PARTS file is reached before the last block has grown to 8,000 bytes. That's good.

Norman: I think I'll be able to read and write the tapes with no problem now. Thanks for your time. You've been a real help.

Claire: No problem. Let me know if you run into any snags.

Later that day, Norman processed the tapes correctly on his first try.

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